

Wilcox Soil and waste area scenarios

1. Sediment – Pond 1 and West Tributary

RAO: Prevent human and ecological direct and ingestion exposures to the sediment with concentrations of contaminants of potential concern (COPCs) exceeding the lead preliminary remediation goal (PRGs) of 200 mg/kg or the benzo(a)pyrene PRG of 1.2 mg/kg

RAO: Minimize migration of sediment COPCs into the ground water, surface water, and Sand Creek

Benzo(a)pyrene: 1.2 mg/kg

Lead: 200mg/kg residential and ecological

Justification:

- Pond is adjacent to the lead additive area and received run-off containing concentrations of lead exceeding the ecological risk and the surface water quality criteria
- Tributary is adjacent to tank waste source area and received run-off containing concentrations of benzo(a)pyrene exceeding the human health soil PRG. This tributary is routinely dry and is considered accessible as soil (also refer to justification for addressing benzo(a)pyrene under the soil section)
- The pond and tributary discharge to Sand Creek for surface water and sediment containing concentrations of lead

2. Soil

RAO: Prevent human and ecological direct and ingestions exposures to the soils with concentrations of contaminants of potential concern (COPCs) exceeding the benzo(a)pyrene preliminary remediation goal (PRGs) of 1.2 mg/kg, the residential lead PRG of 200 mg/kg, and the industrial lead PRG of 400 mg/kg.

RAO: Minimize migration of soil COPCs into the ground water, surface water, and other site soils

Benzo(a)Pyrene: 1.2 mg/kg – apply to soil and waste

Lead: 200mg/kg residential areas

Lead: 400 mg/kg industrial areas on Wilcox process area

Justification:

- Although site-wide risk related to benzo(a)pyrene exposure falls within the risk range, the exposure areas are larger than typical areas that are typically evaluated as residential yards. To further evaluate the surface soil medium of concern and evaluate potential concerns for smaller exposure areas (i.e., potential residential yards), sample results were reviewed to determine if areas of high concentration are present. Based upon this review, it was determined that localized levels of benzo(a)pyrene may present

carcinogenic risks greater than the EPA acceptable cancer risk range. Calculated PRG of 10⁻⁵ for benzo(a)pyrene residential

- Calculated lead PRG for blood lead levels not exceeding 5% chance of 5ug/dL for residential child
- Calculated lead PRG for blood lead levels not exceeding 5% chance of 5ug/dL for industrial worker: locations exceeding 400 and 500 mg/kg are identical. The 400mg/kg is the industrial PRG for not exceeding 5% chance of 5ug/dL blood lead and the PRG for residential blood lead levels not exceeding 5% chance of 10ug/dL blood lead

3. Tank Waste Source Material

RAO: Prevent human and ecological direct and ingestion exposures to the tank waste source material with concentrations of contaminants of potential concern (COPCs) exceeding the benzo(a)pyrene preliminary remediation goal (PRGs) of 1.2 mg/kg, the residential lead PRG of 200 mg/kg, and the industrial lead PRG of 400 mg/kg.

RAO: Minimize migration of soil COPCs into the ground water, surface water, and other site soils

Justification: refer to that presented for soil.

4. Ground Water

RAO: Prevent human ingestion exposure to the ground water with concentrations of contaminants of potential concern (COPCs) exceeding the.....

RAO: Minimize migration of COPCs downgradient

Application of the PRGs across the sites based on current land use and future expected land use.

Area	Current Use	Future Use	Proposed Use for FS and PRG application	Justification
North Tank Farm	Residential	Residential	Residential	Current and future use expected to remain unchanged; unrestricted use and unlimited exposure (UU/UE) with No ICs
	Commercial/Industrial	Commercial/Industrial	Residential	Addressing minimal concentration exceedances leads to UU/UE with No ICs
East Tank Farm	Residential	Residential	Residential	Current and future use expected to remain unchanged; UU/UE with No ICs
	Agricultural/Livestock	Residential/Agricultural/Livestock	Residential	Addressing minimal concentration exceedances leads to UU/UE with No ICs
Lorraine Process Area	Residential	Residential	Residential	Current and future use expected to remain unchanged; UU/UE with No ICs
Wilcox Process Area	Residential	Residential/Commercial/Industrial	Residential/Commercial/Industrial	Current and future use expected to remain unchanged; residential property addressed while remaining portions are restricted to industrial use; UU/UE are residence; ICs restricting to industrial use on remainder of property
Loading Dock Area	Commercial/Industrial	Commercial/Industrial	Residential	Addressing minimal concentration exceedances leads to unrestricted use and unlimited exposure (No ICs)

Comparison of estimated soil volumes based on variations in Future Land Use.

Scenario	Land Uses	Volume at 1ft depth (cubic yards/tons)	Estimated Cost ¹ excavate/dispose	Total Estimated Cost
(1) Site-wide residential	Residential	14,069/20,681	\$436,139/\$827, 257	\$1,263,396
(2) Residential/WPA partial Industrial	All residential with back portion of Wilcox Industrial	10,518/15,461	\$326,058/\$618,458	\$944,516
(3) Residential/Industrial	Residential with NTF, LDA and Wilcox Industrial	8,731/12,835	\$270,661/\$513,383	\$784,044
(4) Residential/Industrial, Wilcox partial residential	Residential including Wilcox residence; NTF, LDA, and Partial Wilcox Industrial	8,974/13,192	\$278,194/\$527,671	\$805,865
(5) Residential/Industrial	Residential, Wilcox partial residential; LDA and Wilcox partial industrial	9,250/13,596	\$286,750/\$543,900	\$830,650

1-cost is provided as a rough comparison and is based on the estimates provided in the 2019 Source Control remedial design. transportation and disposal costs estimated at \$40/ton. Cubic yard estimates are converted to tons using 1.47cy/ton. Estimates for excavation are provided as either \$22/cy or \$39/cy so the average (\$31) is used in this comparison. Yellow highlights the proposed application of PRGs.

Based on the differences between the proposed application of PRGs and the expanded use of the Industrial PRGs, the proposed application can be met at a reasonable cost and volume increase. The proposed application includes an increase of approximately 1,787 cubic yards and a cost of \$160, 472. This minimal increase results in the use of ICs on one property rather than 3 properties. Overall, this increase is approximately 20%.

Note: this estimate is for 1ft depth, volume will increase should excavation be necessary down to 2ft under the residential scenario (2ft depth would be the limit of soil excavation.)

Note: this also assumes that the lead additive area, addressed under the interim action, will not leave lead concentrations that need to be addressed under this final action. If at the completion of the interim action, lead concentrations exceed the selected PRG then this additional volume will need to be included in the final remedy.

Proposed cleanup strategy for an excavation/offsite disposal alternative: Excavation would target the upper foot, using XRF to screen bottom of excavation for PRGS, either additional removal is needed, but no deeper than 2 ft, or excavation is complete and

confirmation sample is collected. Area will be backfilled if there is not enough surrounding soil to grade properly for drainage or the area is too large to regrade for drainage.

Comparison of Waste Volume

Waste	Type/Land Uses	Volume at 1ft depth (cubic yards/tons)	Estimated Cost ¹ excavate/dispose	Total Estimated Cost
NTF	Surface~6"bgs/Residential	1126/1655	\$34,906/\$66,200	\$101,106
ETF	Tar/surface ~6"/2-3ftbgs/Residential	2700/3969	\$83,700/\$158,760	\$242,460
WPA	Industrial/surface	129/189	\$3,999/\$7,560	\$11,559
LPA	Surface ~6"/Residential	543/798	\$16,833/\$31,920	\$48,753
	total	4498/6612	\$139,438/\$264,480	\$403,918
	Proximity total/residential	1341/1971	\$41,571/\$78,850	\$120,421
	Additional Tar at Tank 8	1567/2303	\$48,577/\$92,120	\$140,697

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Addressing all of the noted waste areas would increase the total volume to ~4498cy/6612tons at a cost of ~\$403,918. There is a small number of waste areas that are in close proximity of areas to be addressed based on the soil exceedances of the PRG. These total ~1341cy/1971tons at a cost of ~\$120,421. One uncertainty is the tar material which has variable results some of which exceed the PRGs and some of which do not. Tank 8 noted the presence of tar, so if this volume is added and address due to the unknown nature of the tar composition, then the total becomes ~1567cy/2303tons at a cost of \$140,697.